



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/554,119

10/18/2006

Ole-Bendt Rasmussen

50000-OR04

4648

23873 7590 08/02/2011

ROBERT W STROZIER, P.L.L.C

PO BOX 429

BELLAIRE, TX 77402-0429

EXAMINER

LOPEZ, RICARDO E.

ART UNIT

PAPER NUMBER

1786

MAIL DATE

DELIVERY MODE

08/02/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/554,119	Applicant(s) RASMUSSEN, OLE-BENDT	
	Examiner RICARDO E. LOPEZ	Art Unit 1786	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05/09/2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 49 - 66, 96 and 98 - 118 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 49 - 66, 96 and 98 - 118 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's Amendments and Accompanying Remarks filed on May 09, 2011 has been entered and carefully considered. Claims 49 – 66, 96 and 98 – 118 are all the pending claims in this application. After careful consideration of applicant's amendment, the Examiner has withdrawn the rejections over Momose, and has maintained the rejection over Perez et al. as detailed in the Office Action dated January 13, 2011. The invention as currently claimed is not found to be patentable for reasons herein below.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 49 - 66, 96 and 98 – 118 are rejected under 35 U.S.C. 102 (b) as being unpatentable over Perez et al. US Patent No 6,630,231 B2

4. Considering claims 49 - 66, 96 and 98 – 118, Perez et al. teaches composite articles having a polymeric bulk or matrix phase and a polymeric reinforcement phase comprising polymeric microfibers. The microfibers can be provided by forming highly

Art Unit: 1786

oriented, semi-crystalline, polymeric films or foams, followed by partially or totally microfibrillating the highly oriented film, thereby forming the microfibers [Col. 2, lines 13 – 18].

Furthermore, Perez et al. also teaches that Polymers useful in forming the microfibers include any melt-processable crystalline, semicrystalline or crystallizable polymers. Semicrystalline polymers consist of a mixture of amorphous regions and crystalline regions. The crystalline regions are more ordered and segments of the chains actually pack in crystalline lattices. Some polymers can be made semicrystalline by heat treatments, stretching or orienting, and by solvent inducement, and these processes can control the degree of true crystallinity. Semicrystalline polymers useful in the present invention include, but are not limited to, high and low density polyethylene, polypropylene, and thermotropic liquid crystal polymers [Col. 3, lines 10 – 20].

Moreover, Perez et al. also teaches that Useful polymers preferably are those that can undergo processing to impart a high orientation ratio in a manner that enhances their mechanical integrity, and are semi-crystalline in nature. Orienting semi-crystalline polymers significantly improves the strength and elastic modulus in the orientation direction, and orientation of a semicrystalline polymer below its melting point results in an oriented crystalline phase with fewer chain folds and defects. The most effective temperature range for orienting semicrystalline polymers is between the alpha crystallization temperature of the polymer and its melting point. The alpha crystallization temperature, or alpha transition temperature, corresponds to a secondary transition of the polymer at which crystal sub-units can be moved within the larger crystal unit.

Art Unit: 1786

Preferred polymers in this aspect therefore are those that exhibit an alpha transition temperature (T_{α}) and include, for example: high density polyethylene, linear low density polyethylene, ethylene alpha-olefin copolymers, polypropylene. Particularly preferred polymers in this aspect have melting temperatures greater than 140 degree C and blends of such polymers with lower temperature melting polymers [Col. 3, lines 35 – 64].

Furthermore, Perez et al. also discloses that upon orientation, voids are imparted to the film. As the film is stretched, the two components separate due to the immiscibility of the two components and poor adhesion between the two phases. When the film comprise a continuous phase and a discontinuous phase, the discontinuous phase serves to initiate voids which remain as substantially discrete, discontinuous voids in the matrix of the continuous phase [Col. 7, lines 43 – 50].

Moreover, Perez et al. also teaches that after orientation the cells are relatively planar in shape and have distinct boundaries. Cells are generally coplanar with the major surfaces of the foam, with major axes in the machine (X) and transverse (Y) directions (directions of orientation). The sizes of the cells are substantially uniform and dependent on concentration of blowing agent, extrusion conditions and degree of orientation [Col. 10, lines 53 – 68].

Perez et al. also teaches that the microfibers generally have an effective average diameter less than about 20 microns, and can have an effective average diameter ranging from about 0.01 microns to about 10 microns, preferably 0.1 to 5 microns, and

Art Unit: 1786

are substantially rectangular in cross section. As the microfibers are usually substantially rectangular, the effective diameter may be a measure of the average value of the width and thickness of the fibers. Some microfibers have a Transverse Aspect Ratio of from 1.5:1 to 20:1, while other microfibers have a transverse aspect ratio of between about 3:1 to 9:1 [Col. 12, lines 10 – 20], thus anticipating all limitations in the instant claims.

As to the new limitation in independent claims 49, 56 and 60, for the fibrils of the polymer P1 to be in the polymer P2, this limitation also anticipated by Perez et al., because said reference teaches that the void-initiating component thermoplastic polymer and the semicrystalline polymer form a polymeric blend that is characterized for its limited solubility or immiscibility [Col. 6, lines 49 – 65]; which is interpreted by the Examiner as having the polymer P1 particles in the semicrystalline polymer P2.

Response to Arguments

5. Applicant's Amendments and Accompanying Remarks filed on May 09, 2011 has been entered and carefully considered. Claims 49 – 66, 96 and 98 – 118 are all the pending claims in this application. After careful consideration of applicant's amendment, the Examiner has withdrawn the rejections over Momose, and has maintained the rejection over Perez et al. as detailed in the Office Action dated January 13, 2011. The invention as currently claimed is not found to be patentable for reasons herein below.

Art Unit: 1786

6. Regarding Applicant's arguments against the rejections over Perez et al. with respect to claims 49 – 66, 96 and 98 – 118, these have been considered but are found to be not persuasive for the following reasons.

Applicant traverses the rejections in previous Office Action on the basis that **Perez et al. is not directed to extruded materials formed with microfibrils of one polymer dispersed in another polymer, and because Perez et al discontinuous phase comprises microfibers not microfibrils.**

In response to these arguments, the Examiner respectfully directs Applicant's attention to Perez et al.'s disclosure in [Col. 7, lines 32 – 35], wherein it is taught that **the immiscible mixture of a first polymer component and a void-initiating component is extruded from the melt through a die in the form of a film or sheet** and quenched to maximize the crystallinity of the semicrystalline phase by retarding or minimizing the rate of cooling.

With regards to arguments that Perez et al.'s discontinuous phase comprises microfibers and not microfibrils as claimed, the Examiner respectfully submits that the use of said different terms is just different terminology, because the particles claimed as microfibrils have dimensionally (i.e. about 5 μm .) and in shape (tapes) characteristics that are equivalent to the particles disclosed in Perez et al. as the microfibers of the void initiating polymer component.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RICARDO E. LOPEZ whose telephone number is (571)-270-1150. The examiner can normally be reached on Monday to Thursday 8:00 am-5:30pm EST, and every other Friday from 8:00 am to 4:30 pm..

9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Chriss can be reached on (571)-272-7783. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer A Chriss/
Supervisory Patent Examiner, Art Unit 1786

/REL/
Ricardo E. Lopez
Patent Examiner, Art Unit 1786
July 19, 2011

Application/Control Number: 10/554,119
Art Unit: 1786

Page 8